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Charles Darwin University

Final Examination

Family Name					
Given Name/s					
Student Number					
Teaching Period	Semester 2, 2017				

HIT137 – Software Now	DURATION	
	Reading Time:	10 minutes
	Writing Time:	180 minutes
INSTRUCTIONS TO CANDIDATES		
This question paper contains only one section and you have to answer any Ten (10) questions only. You must mention the question numbers attempted in the cover sheet of the answer booklet.		
EXAM CONDITIONS		
<u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.		
This is a RESTRICTED OPEN BOOK examination		
No calculators are permitted		
One A4 sheet of handwritten single-sided notes permitted		
No dictionaries are permitted		
ADDITIONAL AUTHORISED MATERIALS	EXAMINATION MATERIALS TO BE SUPPLIED	
No additional printed material is permitted	1 x 16 Page Book	

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DOUBLE-SIDED.

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LEFT BLANK.

Section A

Answer any Ten (10) questions ONLY.

Total No of Marks for this Section: 50

This section should be answered on the Answer Sheet provided. Please ensure that your name and student number have been written on the Answer sheet and placed in the completed Answer Booklet.

Marks for each question are indicated. Suggested time allocation for Section A: 180 mins

Question 1

Explain what happens when the following recursive function is called with the value 4 as an argument

```
def example(n) :  
    if n > 0:  
        print(n)  
        example(n-1)
```

(05 Marks)

Question 2

- What are instance variables, and what role does the name "self" play in the context of a class definition?
(2.5 Marks)
- How is the lifetime of an object determined? What happens to an object when it dies?
(2.5 Marks)

Question 3

Define a method for the **Bank** class that returns the total assets in the bank (the sum of all account balances).

(05 Marks)

Question 4

Two playing cards can be compared by rank. For example, an ace is less than a 2. When c1 and c2 are cards, c1.rank < c2.rank expresses this relationship. Explain how a method could be added to the Card class to simplify this expression to c1 < c2.

(05 Marks)

Question 5

Write a python program that calculates and prints the number of minutes in a year.

(05 Marks)

Question 6

Using python, write a loop that accumulates the sum of all of the numbers in a list named data.

(2.5 Marks)

What is the purpose of the **dir** function and the **help** function?

(2.5 Marks)

Question 7

Write a function called **isprime** which takes a single integer argument and returns True if the integer is a prime number, and False otherwise. A prime number is a number with only two distinct divisors, 1 and itself.

Note: 1 is therefore not a prime number.

(05 Marks)

Question 8

Write a Python program that read a line of input from the user until the user enters a blank. The program should print out the total number of occurrences of each letter in the alphabet. These should be printed in alphabetical order. Your program should work like this:

```
> ./letters
hello world
d 1
e 1
h 1
l 3
o 2
r 1
w 1
```

(05 Marks)

Question 9

Why does Python code generate fewer types of syntax errors than code in other programming languages?

(05 Marks)

Question 10

Write a python program that will perform the operations of simple calculator. The operations are : Addition, subtraction, Multiplication and division.

Sample output :

Select operation.

```
1.Add
2.Subtract
3.Multiply
4.Divide
Enter choice(1/2/3/4): 3
Enter first number: 15
Enter second number: 14
15 * 14 = 210
```

(05 Marks)

Question 11

Identify the error in the following program and write the correct python source code

```
line = raw_input("Type a word")
print "You typed", line
line = line + "h"
num = int(line)
print "You typed the number ", num
```

(05 Marks)

Question 12

Describe two fundamental differences between terminal-based user interfaces and GUIs.

(2.5 Marks)

What roles do the parameters and the return statement play in a function definition?

(2.5 Marks)

Question 13

Write a python code to sort the given set of numbers in ascending order. You must not use any built-in functions of python.

(05 Marks)

!End!